

providing at least one valve controlled by an external pressure source;
filling said volumetric chamber with said fluid to create a first aliquot of said fluid;
opening said controllable valve; and
transporting said first aliquot of said fluid to said at least second chamber by
applying pressure from said external source.

93. The method of claim 92 including applying a positive pressure with respect to said volumetric chamber, whereby said positive pressure forces said fluid from said volumetric chamber during said opening of said controllable valve.

94. The method of claim 92 or 93 including venting said volumetric chamber.

95. The method of claim 92 or 93 including venting said volumetric chamber using a hydrophobic membrane sealably disposed across said vent.

A¹ 96. The method of claim 93 wherein said applying said positive pressure includes using a pneumatic system.

Sub c3 97. The method of claim 97 wherein said using said pneumatic system includes using a differential pressure delivery system capable of applying a first pressure to said volumetric chamber and a second pressure to said second chamber.

98. The method of claim 92 including applying a negative pressure with respect to said volumetric chamber, whereby said negative pressure forces said fluid into said volumetric chamber during said opening of said controllable valve.

99. The method of claim 98 wherein said applying said negative pressure includes using a pneumatic system.

100. The method of claim 99 wherein said using said pneumatic system includes using a differential pressure delivery system capable of applying a first pressure to said volumetric chamber and a second pressure to said second chamber.

101. The method of claim 92 including measuring temperature of said fluid.

102. The method of claim 92 including heating said fluid.

103. The method of claim 92 including performing microcapillary electrophoresis.

104. The method of claim 92 including performing transcription.

105. The method of claim 92 including performing labeling.

106. The method of claim 92 including performing fragmentation

107. The method of claim 92 including performing amplification.

108. The method of claim 107 wherein said performing amplification includes performing polymerase chain reaction (PCR).

109. The method of claim 107 wherein said performing amplification includes performing ligase chain reaction (LCR).

110. The method of claim 107 wherein said performing amplification includes performing self sustained sequence replication.

111. The method of claim 107 wherein said performing amplification includes performing nucleic acid based sequence amplification (NASBA).

112. The method of claim 92 wherein said fluid includes a reagent.

113. The method of claim 92 wherein said fluid includes a buffer.

114. The method of claim 92 wherein said fluid includes a biological polymer.

115. The method of claim 92 including reconstituting a reagent kept in a lyophilized form.

116. The method of claim 115, wherein said reconstituting includes transporting said first aliquot of said fluid to said second chamber wherein said reagent is located.

Sub c 4 117. A miniature fluidic system for measuring and processing a known volume of a fluid controlled by an external pressure source, comprising:

a microfabricated device having at least first and second chambers disposed therein, said at least first and second chambers including at least one vent port and at least one of said chambers being a volumetric chamber having a known volume;

at least one valve controlled by an external pressure source;

means for filling said volumetric chamber with said fluid to create a first aliquot of said fluid;

means for opening said controllable valve; and

means for transporting said first aliquot of said fluid to said at least second chamber.

118. The system of claim 117 including means for measuring temperature of said fluid.

119. The system of claim 117 including means for heating said fluid.

120. The system of claim 117 including means for performing microcapillary electrophoresis.

121. The system of claim 117 including means for performing transcription.

122. The system of claim 117 including means for performing labeling.

123. The system of claim 117 including means for performing fragmentation

124. The system of claim 117 including means for performing amplification.

125. The system of claim 124 wherein said means for performing amplification includes means for performing polymerase chain reaction (PCR).

126. The system of claim 124 wherein said means for performing amplification includes means for performing ligase chain reaction (LCR).

A' *Sub c5* 127. The system of claim 117 wherein said fluid includes a reagent.

128. The system of claim 117 wherein said fluid includes a buffer.

129. The system of claim 117 wherein said fluid includes a biological polymer.

130. The system of claim 117 including reconstituting a reagent kept in a lyophilized form.

131. The system of claim 130, wherein said reconstituting includes transporting said first aliquot of said fluid to said second chamber wherein said reagent is located.--